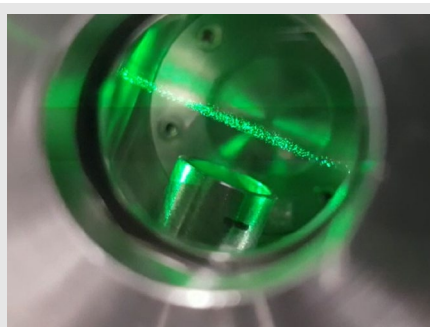


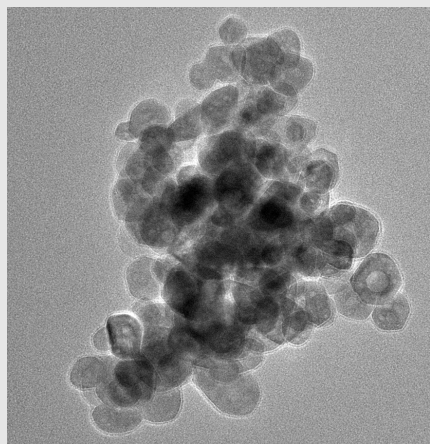
## Project thesis/ Master thesis

### Spectrally resolved measurements with Laser-Induced Incandescence on nanoparticle aerosols

Supervisor: Peter Lang  
Start: As of now  
Topics: Optical metrology, laser-induced  
incandescence



The measuring cell in which the particles are heated in operation



TEM image of a nanoparticle aggregate

The central topic of the working group „Particle Measurement“ of the Institute of Engineering Thermodynamics (LTT) is the investigation/development of suitable methods for the characterization of nanoparticles.

Laser-Induced Incandescence (LII) is a laser-optical measurement technique in which nanoparticles are heated by a laser and the resulting change in the thermal radiation is detected using suitable methods. The signal obtained in this way can be used to determine the particle size. In addition to optical properties of the particles, parameters describing the heat transfer must also be determined. This is usually done by calibration measurements on particle samples of known size.

To minimize errors (e.g. due to superimposed fluorescence) an existing measurement setup shall be extended. For the detection of the LII signal, in addition to fast photodetectors at different wavelengths, a so-called spectrally resolving camera system is to be used, which can simultaneously record temporal and spectral information, allowing a significantly more accurate calibration of the measurement technique.

Students should have an interest in optical metrology and be able to work independently. Basic knowledge in the above-mentioned subject area is advantageous, but not mandatory.

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